

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of claims:

Please amend the claims as follows:

1. (Currently Amended) A ~~back-light~~~~backlight~~ device for a liquid crystal display device, comprising:

a light source providing light;

a light waveguide plate guiding light from the light source, said light waveguide plate having an emitting surface, a front surface and a bottom surface, the emitting surface being adjacent to the light source;

a reflector arranged under the bottom surface of the light waveguide ~~waveguide~~ plate, reflecting light; and

at least one single layer cholesteric liquid crystal (CLC) film arranged on the front surface of the light waveguide ~~waveguide~~ plate, ~~selectively~~ collimating light ~~by controlling a helical pitch P of said CLC film according to the equation:~~

$$\lambda_0 = P(n_o + n_e)/2,$$

~~where λ_0 is a wavelength of vertically incident light, P is a helical pitch, n_o is an ordinary refractive index, and n_e is an extraordinary refractive index.~~

2. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 1, wherein the single layer CLC film is one of either a ~~right handed~~ ~~right-handed~~ or a ~~left handed~~ ~~left-handed~~ CLC layer, the ~~right handed~~ ~~right-handed~~ CLC layer selectively reflecting ~~right handed~~ ~~right-handed~~ circularly polarized light and the left-handed CLC layer reflecting left-handed circularly polarized light.

3. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 1, wherein the at least one single layer CLC film has a dual-layered structure having both a ~~right~~ ~~right-handed~~ and a ~~left handed~~ ~~left-handed~~ CLC layer, the ~~right~~ ~~right-handed~~ and ~~left handed~~ ~~left-handed~~ CLC layer selectively reflecting ~~right~~ ~~right-handed~~ and ~~left handed~~ ~~left-handed~~ circularly polarized light, respectively.

4. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 1, further comprising a prism sheet arranged between the at least one single layer CLC film and the front surface of the light ~~wave guide~~ ~~waveguide~~ plate.

5. (Currently Amended) A ~~back-light~~~~backlight~~ device for a liquid crystal display device, comprising:

a light source providing light;

a light waveguide plate guiding light from the light source, said light waveguide plate having an emitting surface, a front surface and a bottom surface, the emitting surface being adjacent to the light source;

a reflector arranged under the bottom surface of the light ~~wave guide~~ waveguide plate, reflecting light; and

at least one single layer cholesteric liquid crystal (CLC) films arranged over the front surface of the light ~~wave guide~~ waveguide plate, collimating light, wherein the at least one CLC film selectively reflects vertically incident light with a wavelength of more than 600 nm by controlling a helical pitch P of said CLC film according to the equation:

$$\lambda_0 = P(n_o + n_e)/2,$$

where λ_0 is a wavelength of vertically incident light, P is a helical pitch, n_o is an ordinary refractive index, and n_e is an extraordinary refractive index.

6. (Currently Amended) The ~~back-light~~backlight device of claim 5, wherein each single layer CLC film is one of either a ~~right-handed~~ right-handed or a ~~left handed~~ left-handed CLC layer, each ~~right-handed~~ right-handed CLC layer selectively reflecting ~~right-handed~~ right-handed circularly polarized light and each left-handed CLC layer reflecting left-handed circularly polarized light.

7. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 5, wherein each single layer CLC film is formed by a dual-layered structure, each structure having both a ~~right~~ ~~right-handed~~ and a ~~left-handed~~ ~~left-handed~~ CLC layer, the ~~right~~ ~~right-handed~~ and ~~left-handed~~ ~~left-handed~~ CLC layers selectively reflecting ~~right~~ ~~right-handed~~ and left-handed circularly polarized light, respectively.

8. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 5, further comprising a prism sheet arranged between the at least one single layer CLC film and the front surface of the light ~~wave guide~~ ~~waveguide~~ plate.

9. (Currently Amended) A ~~back-light~~~~backlight~~ device for a liquid crystal display device, comprising:

a light source providing light;

a light waveguide plate guiding light from the light source, said light waveguide plate having an emitting surface, a front surface and a bottom surface, the emitting surface being adjacent to the light source, the length of said emitting surface being substantially shorter than a length of the front surface;
and

at least one cholesteric liquid crystal (CLC) film arranged on the emitting surface of the light ~~wave guide~~ ~~waveguide~~ plate, collimating light.

10. (Currently Amended) The ~~back-lightbacklight~~ device of claim 9, wherein the at least one CLC film is one of either a ~~right handed~~ ~~right-handed~~ or a ~~left handed~~ ~~left-handed~~ CLC layer, the ~~right handed~~ ~~right-handed~~ CLC layer selectively reflecting ~~right handed~~ ~~right-handed~~ circularly polarized light and the left-handed CLC layer reflecting left-handed circularly polarized light.

11. (Currently Amended) The ~~back-lightbacklight~~ device of claim 9, wherein each of the at least one CLC films is formed by a dual-layered structure, each structure having both a ~~right~~ ~~right-handed~~ and a ~~left handed~~ ~~left-handed~~ CLC layer, the ~~right~~ ~~right-handed~~ and ~~left handed~~ ~~left-handed~~ CLC layers selectively reflecting ~~right~~ ~~right-handed~~ and left-handed circularly polarized light, respectively.

12. (Currently Amended) The ~~back-lightbacklight~~ device of claim 9, further comprising a prism sheet arranged between the at least one CLC film and the front surface of the ~~wave guide~~ ~~waveguide~~ plate.

13. (Currently Amended) A ~~back-lightbacklight~~ device for a liquid crystal display device, comprising:

a light source providing light;

a light waveguide plate guiding light from the light source, said light waveguide plate having an emitting surface, a front surface and a bottom surface, the emitting surface being adjacent to the light source, ~~the length of said emitting surface being substantially shorter than a length of the front surface;~~

a reflector arranged under the bottom surface of the light waveguide plate, reflecting light; and

at least one cholesteric liquid crystal (CLC) film arranged on the emitting surface of the light waveguide plate adjacent to the light source.

14. (Currently Amended) The ~~back-lightbacklight~~ device of claim 13, wherein the single layer CLC film is one of either a ~~right handed~~ right-handed or a ~~left handed~~ left-handed CLC layer, the ~~right handed~~ right-handed CLC layer selectively reflecting ~~right handed~~ right-handed circularly polarized light and the left-handed CLC layer reflecting left-handed circularly polarized light.

15. (Currently Amended) The ~~back-lightbacklight~~ device of claim 13, wherein the at least one single layer CLC film has a dual-layered structure having both a ~~right~~ right-handed and a ~~left handed~~ left-handed CLC layer, the ~~right~~ right-handed and ~~left handed~~ left-handed CLC layer selectively reflecting right and left-handed circularly polarized light, respectively.

16. (Currently Amended) The ~~back-light~~~~backlight~~ device of claim 13, further comprising a prism sheet arranged between the at least one single layer CLC film and the front surface of the light ~~wave guide~~ waveguide.